

Software for the HCAL Test Stands



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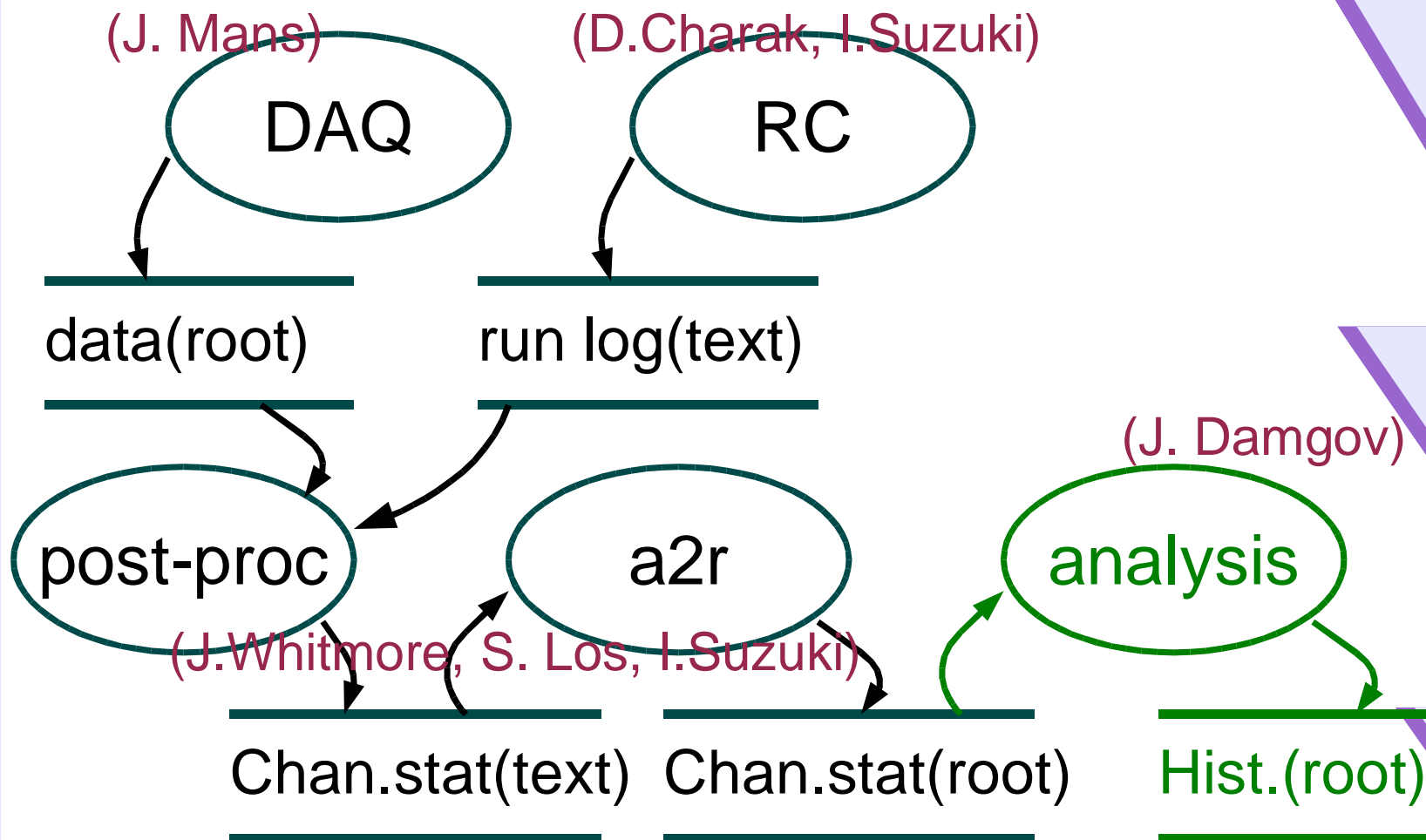
CMS HCAL meeting, 2004/02/20

CMS HCAL mtg., 2004/02/20

QIEC Test Stand Software

- Modified TB2003 DAQ + DB
- Run control, TB2003 version + VMEDAC control/sequencer
- Scripts and small ROOT programs to get statistical information
- History:
 - '03 Nov. - VMEDAC control + sequencer + skeleton scripts
 - '04 Jan. - Chain of scripts for post-processing

Data Flow of the QIEC Test



Lessons Learnt

- TB2003
 - Comprehensive test code - Code w/o tests was always broken.
 - No ad-hoc implementation - Sequencer code was mess and never debugged.
- WH14 test stand
 - Code management - Consistent code management could avoid several mishaps.
 - Flexibility to adopt to environment - Test-beam/WH14/...

The New Run Control

- Finally, we know what we need.
- Smaller, better structured code (about 30% less lines)
- Works with the new DAQ code and XDAQ V2.x
- Better scripting
- Better test coverage - Demo.
- Same code for both test beam and test stands
- All basic functionalities were implemented
- DCS(DIM?) and VMEDAC interfaces are missing, will be implemented in two weeks.

The New Run Control - Scripting

```
set rbx1 bias 80           # comment
set rbx1 clock osc
set rbx1 qiemode calib
```

← Slow control commands

```
set events 1000
set runnumber auto
set runtype Test-pedestal
```

← Run control commands

```
set rbx1 hv 0
set info Ped,0kV,calib
run
```

← Take a run and wait to finish

```
set rbx1 qiemode normal
set rbx1 hv 8
set info Ped,8kV,normal
run
message "All done."
```

The New Run Control - Scripting (Cont'd)

```
set runtype HF-beam
set info "HF table scan"
run hftable 1200 400 400
run hftable 1400 400 400
```

← HF beam scan

```
set runtype HF-source
set info "HF table scan"
run hfsource 5 8
run hfsource 1 4
```

← HF source scan

```
set runtype wh14-htr16top
set info "QIEC test"
run vmedac 4078900 21000 1000000 20. 0.15 # Freq., R(A), R(B), Q(A),
Q(B)
run vmedac 4078900 21000 1000000 40. 0.15
run vmedac 4078900 21000 1000000 60. 0.15
```

← QIEC tests

Issues

- There are strange points of data
 - S. Los and others are investigating.
- No revision control and backup.
- Run number shortage. - Currently, ~200 run #s per card.
- Integration with DBs (run, equipment ...)
- A cycle of problem report - fix - test is long
 - Getting better recently.
- Run control developers don't know HCAL's future need on test stands.

Summary

- Test stand software is similar to the test beam DAQ.
- QIEC test stand software is working,
ready for the mass testing.
(assuming some minor problems will be solved soon)
- New run control code has been developed,
will be installed in near future.
- We need more communication between users and
developers.